

We claim:

1. A method of transmitting data between devices interconnected via a bus, which comprises:

transmitting, in units, data from a first device to one or more second devices together with information concerning at least one of a transmission and a use of the data;

forming the units at least partly with at least one region defining a given time slot within which the devices transmitting no data can output onto the bus data representing specific information; and

defining, in the devices enabled for outputting data within the given time slot, settings selected from the group consisting of a setting to determine under which conditions data are to be output within the given time slot, a setting which data representing information are to be output within the given time slot, and a setting at which points in time within the time slot the data are to be output.

2. The method according to claim 1, which comprises determining the settings relating to the given time slot before a start of the transmission of the unit containing the given time slot.

3. The method according to claim 1, which comprises determining the settings relating to the given time slot with one or more of the devices connected to the bus.
4. The method according to claim 1, which comprises determining the settings relating to the given time slot based on one of data and instructions transmitted to the respective devices via the bus.
5. The method according to claim 1, which comprises determining the settings relating to the given time slot upon initializing the devices.
6. The method according to claim 1, wherein the settings relating to the given time slot are variable settings.
7. The method according to claim 1, which comprises storing the settings relating to the given time slot in nonvolatile memory devices.
8. The method according to claim 1, wherein the units for transmitting the data and the information concerning the transmission or the use of the data are frames.

9. The method according to claim 1, wherein the units for transmitting the data and the information concerning the transmission or the use of the data are messages.

10. The method according to claim 1, wherein the units in which the data to be transmitted are transmitted together with the information which is required or useful for the transmission and/or the use of the data is transmitted in each case serially via the bus at a specific transmission clock rate.

11. The method according to claim 1, which comprises determining with the data and information contained in the units containing the data to be transmitted together with information required or useful for the transmission or the use of the data whether certain devices output information onto the bus at which points in time.

12. The method according to claim 11, which comprises determining with the data and information contained in the units which devices output information onto the bus.

13. The method according to claim 1, which comprises defining the given time slot for transmission of one or more bits via the bus.

14. The method according to claim 1, wherein the data to be output onto the bus during the given time slot comprise a positive acknowledge bit indicating that the device outputting the acknowledge bit onto the bus has previously received in a fault-free condition data transmitted via the bus.

15. The method according to claim 14, wherein the devices which are connected to the bus are set in such a way that exclusively devices for which the data transmitted via the bus are intended acknowledge the fault-free reception of the data by outputting a positive acknowledge bit onto the bus.

16. The method according to claim 14, wherein, if a plurality of the devices connected to the bus are set in such a way that they have to acknowledge the fault-free reception of the data by outputting a positive acknowledge bit, the plurality of devices is set such that the positive acknowledge bits which are to be output if appropriate are output by the plurality of devices at different points in time.

17. The method according to claim 15, wherein the devices connected to the bus are set such that the devices for which the data transmitted via the bus is not intended do not output any data onto the bus at least at the points in time at which the devices for which the data transmitted via the bus is

18. The method according to claim 1, wherein the data to be output onto the bus during the given time slot comprise a negative acknowledge bit indicating that the device outputting the negative acknowledge bit onto the bus has previously not received in a fault-free condition data transmitted via the bus.

19. The method according to claim 18, wherein the devices connected to the bus are set such that exclusively devices for which the data transmitted via the bus is intended to signal a non-fault-free reception of the data by outputting a negative acknowledge bit onto the bus.

20. The method according to claim 18, wherein if a plurality of the devices connected to the bus are set such that they have to signal the non-fault-free reception of the data by outputting a negative acknowledge bit, at least some of the plurality of the devices are set such that they output at the same time the negative acknowledge bits that are to be output if appropriate.

21. The method according to claim 18, wherein the devices connected to the bus are set such that the devices for which

the data transmitted via the bus is not intended do not output any data onto the bus at least at the points in time at which the devices for which the data transmitted via the bus is intended must be able to signal the non-fault-free reception of the data.

22. The method according to claim 1, wherein the devices connected to the bus are set such that individual devices, a plurality of devices, or all the devices connected to the bus output a positive acknowledge bit onto the bus at different points in time within the given time slot if the devices have received in a fault-free condition data previously transmitted via the bus, or they output a negative acknowledge bit if the opposite is the case, in each case at other, different points in time within the given time slot.

23. The method according to claim 1, wherein the devices connected to the bus are set such that a content of the current frame or of a specific preceding frame or the content of the current message or of a specific preceding message determines which of the devices has to output which information onto the bus at which point in time.

24. A method of transmitting data between devices interconnected via a bus, which comprises:

transmitting, in units, data from a first device to one or more second devices together with information concerning at least one of a transmission and a use of the data;

forming the units at least partly with at least one region defining a given time slot within which the devices transmitting no data can output onto the bus data representing specific information; and

defining, at least in specific devices, settings selected from the group consisting of a setting to determine which other devices have to output data within the given time slot, a setting which data representing information are to be output within the given time slot by the other devices, and at which points in time within the given time slot the other devices have to output the respective data.

25. The method according to claim 24, which comprises determining the settings relating to the given time slot before a start of the transmission of the unit containing the given time slot.

26. The method according to claim 24, which comprises determining the settings relating to the given time slot with one or more of the devices connected to the bus.

33. The method according to claim 24, wherein the units in which the data to be transmitted are transmitted together with



the information which is required or useful for the transmission and/or the use of the data is transmitted in each case serially via the bus at a specific transmission clock rate.

34. The method according to claim 24, which comprises determining with the data and information contained in the units containing the data to be transmitted together with information required or useful for the transmission or the use of the data whether certain devices output information onto the bus at which points in time.

35. The method according to claim 34, which comprises determining with the data and information contained in the units which devices output information onto the bus.

36. The method according to claim 24, which comprises defining the given time slot for transmission of one or more bits via the bus.

37. The method according to claim 24, wherein the data to be output onto the bus during the given time slot comprise a positive acknowledge bit indicating that the device outputting the acknowledge bit onto the bus has previously received in a fault-free condition data transmitted via the bus.

38. The method according to claim 37, wherein the devices which are connected to the bus are set in such a way that exclusively devices for which the data transmitted via the bus are intended acknowledge the fault-free reception of the data by outputting a positive acknowledge bit onto the bus.

39. The method according to claim 37, wherein, if a plurality of the devices connected to the bus are set in such a way that they have to acknowledge the fault-free reception of the data by outputting a positive acknowledge bit, the plurality of devices is set such that the positive acknowledge bits which are to be output if appropriate are output by the plurality of devices at different points in time.

40. The method according to claim 38, wherein the devices connected to the bus are set such that the devices for which the data transmitted via the bus is not intended do not output any data onto the bus at least at the points in time at which the devices for which the data transmitted via the bus is intended must be able to acknowledge the fault-free reception of the data.

41. The method according to claim 24, wherein the data to be output onto the bus during the given time slot comprise a negative acknowledge bit indicating that the device outputting the negative acknowledge bit onto the bus has previously not

received in a fault-free condition data transmitted via the bus.

42. The method according to claim 41, wherein the devices connected to the bus are set such that exclusively devices for which the data transmitted via the bus is intended to signal a non-fault-free reception of the data by outputting a negative acknowledge bit onto the bus.

43. The method according to claim 41, wherein if a plurality of the devices connected to the bus are set such that they have to signal the non-fault-free reception of the data by outputting a negative acknowledge bit, at least some of the plurality of the devices are set such that they output at the same time the negative acknowledge bits that are to be output if appropriate.

44. The method according to claim 41, wherein the devices connected to the bus are set such that the devices for which the data transmitted via the bus is not intended do not output any data onto the bus at least at the points in time at which the devices for which the data transmitted via the bus is intended must be able to signal the non-fault-free reception of the data.

45. The method according to claim 24, wherein the devices connected to the bus are set such that individual devices, a plurality of devices, or all the devices connected to the bus output a positive acknowledge bit onto the bus at different points in time within the given time slot if the devices have received in a fault-free condition data previously transmitted via the bus, or they output a negative acknowledge bit if the opposite is the case, in each case at other, different points in time within the given time slot.

46. The method according to claim 24, wherein the devices connected to the bus are set such that a content of the current frame or of a specific preceding frame or the content of the current message or of a specific preceding message determines which of the devices has to output which information onto the bus at which point in time.

47. A device for connection to other devices via a bus, comprising means for transmitting data together with information concerning one of a transmission and a use of the data in units, wherein at least some of the units are formed with at least one region defining a time slot within which the device can output onto the bus data representing specific information, and wherein the device contains settings selected from the group consisting of a setting determining under which conditions the device has to output data within the time slot,

a setting determining which data representing information the device has to output within the time slot, and a setting determining at which points in time within the time slot the data is to be output.

48. The method according to claim 47, which comprises determining the settings relating to the given time slot before a start of the transmission of the unit containing the time slot.

49. The method according to claim 47, which comprises determining the settings relating to the time slot with one or more of the devices connected to the bus.

50. The method according to claim 47, which comprises determining the settings relating to the time slot based on one of data and instructions transmitted to the respective devices via the bus.

51. The method according to claim 47, which comprises determining the settings relating to the time slot upon initializing the devices.

52. The method according to claim 47, wherein the settings relating to the time slot are variable settings.

53. The method according to claim 47, which comprises storing the settings relating to the time slot in nonvolatile memory devices.

54. The method according to claim 47, wherein the units for transmitting the data and the information concerning the transmission or the use of the data are frames.

55. The method according to claim 47, wherein the units for transmitting the data and the information concerning the transmission or the use of the data are messages.

56. The method according to claim 47, wherein the units in which the data to be transmitted is transmitted together with the information which is required or useful for the transmission and/or the use of the data is transmitted in each case serially via the bus at a specific transmission clock rate.

57. The method according to claim 47, wherein the data and information contained in the units containing the data to be transmitted together with information required or useful for the transmission or the use of the data determine whether certain devices output information onto the bus at which points in time.

58. The method according to claim 57, wherein the data and information contained in the units further determine which devices output information onto the bus.

59. The method according to claim 47, wherein the time slot is defined for transmission of one or more bits via the bus.

60. The method according to claim 47, wherein the data to be output onto the bus during the time slot comprises a positive acknowledge bit indicating that the device outputting the acknowledge bit onto the bus has previously received in a fault-free condition data transmitted via the bus.

61. The method according to claim 60, wherein the devices which are connected to the bus are set in such a way that exclusively devices for which the data transmitted via the bus are intended acknowledge the fault-free reception of the data by outputting a positive acknowledge bit onto the bus.

62. The method according to claim 60, wherein, if a plurality of the devices connected to the bus are set in such a way that they have to acknowledge the fault-free reception of the data by outputting a positive acknowledge bit, the plurality of devices is set such that the positive acknowledge bits which are to be output if appropriate are output by the plurality of devices at different points in time.

63. The method according to claim 61, wherein the devices connected to the bus are set such that the devices for which the data transmitted via the bus is not intended do not output any data onto the bus at least at the points in time at which the devices for which the data transmitted via the bus is intended must be able to acknowledge the fault-free reception of the data.

64. The method according to claim 47, wherein the data to be output onto the bus during the time slot comprise a negative acknowledge bit indicating that the device outputting the negative acknowledge bit onto the bus has previously not received in a fault-free condition data transmitted via the bus.

65. The method according to claim 64, wherein the devices connected to the bus are set such that exclusively devices for which the data transmitted via the bus is intended to signal a non-fault-free reception of the data by outputting a negative acknowledge bit onto the bus.

66. The method according to claim 64, wherein if a plurality of the devices connected to the bus are set such that they have to signal the non-fault-free reception of the data by outputting a negative acknowledge bit, at least some of the



69. The method according to claim 47, wherein the devices connected to the bus are set such that a content of the current frame or of a specific preceding frame or the content of the current message or of a specific preceding message

determines which of the devices has to output which information onto the bus at which point in time.

70. A device for connection to other devices via a bus, comprising means for transmitting data together with information concerning one of a transmission and a use of the data in units, wherein at least some of the units are formed with at least one region defining a time slot within which one or a plurality of other devices can output onto the bus data representing specific information, and wherein the device contains settings selected from the group consisting of a setting determining which other devices output data within the time slot, a setting determining which data representing information has to be output within the time slot by the other devices, and a setting determining at which points in time within the time slot the other devices have to output the respective data.

71. The method according to claim 70, which comprises determining the settings relating to the given time slot before a start of the transmission of the unit containing the time slot.

72. The method according to claim 70, which comprises determining the settings relating to the time slot with one or more of the devices connected to the bus.

78. The method according to claim 70, wherein the units for transmitting the data and the information concerning the transmission or the use of the data are messages.

79. The method according to claim 70, wherein the units in which the data to be transmitted is transmitted together with the information which is required or useful for the transmission and/or the use of the data is transmitted in each case serially via the bus at a specific transmission clock rate.

80. The method according to claim 70, wherein the data and information contained in the units containing the data to be transmitted together with information required or useful for the transmission or the use of the data determine whether certain devices output information onto the bus at which points in time.

81. The method according to claim 80, wherein the data and information contained in the units further determine which devices output information onto the bus.

82. The method according to claim 70, wherein the time slot is defined for transmission of one or more bits via the bus.

83. The method according to claim 70, wherein the data to be output onto the bus during the time slot comprises a positive acknowledge bit indicating that the device outputting the acknowledge bit onto the bus has previously received in a fault-free condition data transmitted via the bus.

84. The method according to claim 83, wherein the devices which are connected to the bus are set in such a way that exclusively devices for which the data transmitted via the bus are intended acknowledge the fault-free reception of the data by outputting a positive acknowledge bit onto the bus.

85. The method according to claim 83, wherein, if a plurality of the devices connected to the bus are set in such a way that they have to acknowledge the fault-free reception of the data by outputting a positive acknowledge bit, the plurality of devices is set such that the positive acknowledge bits which are to be output if appropriate are output by the plurality of devices at different points in time.

86. The method according to claim 84, wherein the devices connected to the bus are set such that the devices for which the data transmitted via the bus is not intended do not output any data onto the bus at least at the points in time at which the devices for which the data transmitted via the bus is intended must be able to acknowledge the fault-free reception of the data.

87. The method according to claim 70, wherein the data to be output onto the bus during the time slot comprise a negative acknowledge bit indicating that the device outputting the

negative acknowledge bit onto the bus has previously not received in a fault-free condition data transmitted via the bus.

88. The method according to claim 87, wherein the devices connected to the bus are set such that exclusively devices for which the data transmitted via the bus is intended to signal a non-fault-free reception of the data by outputting a negative acknowledge bit onto the bus.

89. The method according to claim 87, wherein if a plurality of the devices connected to the bus are set such that they have to signal the non-fault-free reception of the data by outputting a negative acknowledge bit, at least some of the plurality of the devices are set such that they output at the same time the negative acknowledge bits that are to be output if appropriate.

90. The method according to claim 87, wherein the devices connected to the bus are set such that the devices for which the data transmitted via the bus is not intended do not output any data onto the bus at least at the points in time at which the devices for which the data transmitted via the bus is intended must be able to signal the non-fault-free reception of the data.

91. The method according to claim 70, wherein the devices connected to the bus are set such that individual devices, a plurality of devices, or all the devices connected to the bus output a positive acknowledge bit onto the bus at different points in time within the time slot if the devices have received in a fault-free condition data previously transmitted via the bus, or they output a negative acknowledge bit if the opposite is the case, in each case at other, different points in time within the time slot.

92. The method according to claim 70, wherein the devices connected to the bus are set such that a content of the current frame or of a specific preceding frame or the content of the current message or of a specific preceding message determines which of the devices has to output which information onto the bus at which point in time.